

curriculum. It appeared from counsel's opinion that the proposed degree would not carry with it the rights and privileges of the master of arts degree. On the latter ground opposition was made to the statute by a considerable portion of those engaged in teaching natural science at Oxford. Prof. Odling had issued a memorandum, extensively signed by residents interested in science, in which he had explained his reasons for opposing the statute. The statute, by completely separating the faculties of arts and natural science, would allow no honour student in one faculty to become an honour student in the other without beginning in the new faculty *ab initio*; and no honour student in the faculty of natural science could fall back, as at present, on the ordinary pass degree. The broader question of lowering the value of natural science degrees by putting them on a different footing from degrees in arts, was not discussed in congregation on Tuesday; but Dr. Magrath's amendment to reject the whole statute except the preamble, was passed by a vote of fifty-four against forty-eight. The whole subject will thus have to be rediscussed on a future occasion.

The examination in the Honour School of Natural Science will commence next Monday, November 24.

CAMBRIDGE.—The Cambridge women students add no unimportant quota to the numbers in residence, numbering something like 160 or 170 this term. At Girton College there are over fifty students, including about six of the first year who purpose studying natural science. They have a good chemical laboratory, under Miss Herschel's superintendence, also a library which includes many valuable presents of books and apparatus. There are now eleven lecture- and class-rooms, and a good hospital and nurse's room have been built, capable of being entirely detached from the rest of the College. Miss Tomlinson's success in winning an entrance scholarship at the London School of Medicine for Women, and entering for the London Medical Examinations, will doubtless tend to show that a Cambridge course in science is no bad preparation for women as well as men before proceeding to medical degrees.

The Newnham College Association will shortly have two houses of residence facing one another, together with a complete set of lecture-rooms and a chemical laboratory. There are eighty two students in residence at Cambridge who have come for the lectures to women, besides about twenty who attend the lectures each term, being residents, school-mistresses, &c. Miss Lawrence, who gained marks equivalent to a second-class when informally examined in the last Natural Sciences Tripos, remains in residence, and demonstrates for the lady-students who attend Dr. Michael Foster's and Mr. Balfour's lectures. Mr. Vines's lectures on Vegetable Physiology are open to ladies who obtain special permission.

Mr. Freeman, of St. John's College, has given to the Women's Association a quantity of valuable electrical apparatus which will be used in giving instruction in experimental physics. Mr. R. T. Wright, on leaving Cambridge, resigns his active work for the Association as secretary, and pending the formation of the Newnham College Company, Miss M. G. Kennedy is appointed secretary to the Association for the remaining period of its existence. Nine scholarships have been awarded by the Association on the last higher local and other examinations, and over 700*l.* thus given or lent to students in one year. About 1,000*l.* has been paid to the Association during the year by students attending its lectures. As soon as the memorandum and articles of association of Newnham College are complete, a copy will be kept by Mrs. Bateson at St. John's Lodge, for inspection by any member of the existing Association.

A noteworthy entertainment of the British Medical Association by Cambridge University, town, and county, may be expected next August, when Prof. Humphry will preside. The president's position will be very conspicuous, for he is now, by Mr. Lestougeon's retirement, senior surgeon and clinical lecturer on surgery to the Cambridge (Addenbrooke's) Hospital and Medical School, as well as professor of anatomy. A public meeting was held on Friday, the 14th, in the Cambridge Guildhall, at 2.30, under the presidency of the Vice-Chancellor (Dr. E. H. Perowne, Master of Corpus Christi College), when Dr. Humphry made a statement of the objects of the Association and the proposed arrangements for the meeting. His son, Mr. A. P. Humphry, one of the Esquire Bedells, is honorary secretary of the Local Executive Committee. Most probably at least a thousand members will attend the meeting. Dr. Michael Foster will deliver the address in Physiology, and Mr. Timothy Holmes that on Surgery. Dr. Paget, Regius Professor of Medicine, will pre-

side over the section of Medicine, he having been president of the Association itself when it last met in Cambridge; and Sir James Paget will be president of the newly constituted section of Pathology. Dr. J. B. Bradbury is to deliver the address in medicine at the meeting; he holds the Linacre Lectureship, delivering lectures on pathology, is medical lecturer of Gonville and Caius College, and one of the physicians to Addenbrooke's Hospital, and took a distinguished position in the Cambridge Natural Sciences Tripos.

Mr. G. B. Atkinson, Trinity Hall, Cambridge, has been appointed secretary of honour examinations.

We are glad to learn that mathematics and geology are now studied by more students who enter the Cambridge Higher Local Examinations. In the examination in mathematics in June, the candidates showed better style and appreciation of mathematical ideas. All the subjects gain favourable reports, and in astronomy one candidate did remarkably well. The work in the differential and integral calculus was good, the introduction of this paper having been successful. In botany there was much guesswork and little evidence of histological work by candidates. One of the candidates, placed first in zoology, sent up admirable work in botany. Some candidates did very well in practical chemistry. The examiner's report on physiology, now first introduced as a separate subject, is on the whole favourable; only one set of papers on physics was sent up. In 1879, Group C (Mathematics) had 60 candidates, of whom 19 failed and 8 obtained a first class; in Group E, 73, of whom 35 failed and 4 obtained a first class.

The Report of the Board of Natural Sciences Studies, which we referred to last week, was rejected by 46 to 26 votes. Prof. Paget and Mr. Bettany issued a fly-sheet complaining that the subjects of examination were now too numerous and extensive; encouraging candidates to an injurious amount of memory-work in attaining "general knowledge and proficiency;" and that there should now be a Biological and a Physical Tripos. Mr. Sedley Taylor and Mr. Vines, as well as Prof. Dewar and Mr. Balfour, object to the advance of human anatomy to so conspicuous a place in the Tripos. Dr. Humphry considers the recognition of human anatomy in the Tripos not greater than it deserves. However, he would now prefer a "Medical Tripos."

### SCIENTIFIC SERIALS

*Journal of Anatomy and Physiology, Normal and Pathological*, vol. xiv. part i., October.—Drs. Gibson and Malet, on a pre-sternal fissure, uncovering the base of the heart, pl. 1.—Dr. W. Ostler, case of congenital and progressive hypertrophy of the right upper extremity.—Prof. Flower and Dr. Garson, the scapular index as a race character in man.—Dr. W. Allen, the varieties of the atlas in the human subject and the homologues of its transverse processes, pl. 2.—Prof. Cleland, note on the foregoing.—Dr. Creighton, the infection of the connective tissue in scirrhus cancers of the breast.—Dr. Watson, the homology of the sexual organs, illustrated by comparative anatomy and pathology.—Prof. Bridge, on the pori abdominales of vertebrata.—Prof. Turner, on the pori abdominales in some sharks.—Prof. Turner, a description of a cleft sternum.—Dr. J. Barlow, the physiological action of ozonised air.—Prof. Charles, on the mode of propagation of nervous impulses.—Dr. Cook, on a logwood staining solution.—Dr. Dobson, case of the development of hair on the eyeball of a dog.—Dr. Osler, on Giacomini's method of preserving the brain.—Anatomical notes.

THE recent numbers of the *Scottish Naturalist*, which has now been in existence for nine years, show no falling off from the interest of the earlier ones. In addition to the descriptive papers and lists of localities in the various departments of natural history, we find in the last number a paper on the Gaelic names of plants, one on the effects of the past winter and present summer on hard-wooded plants, and one on the auriferous quartz of Wanlockhead. The list of Scottish insects by experts in the various sections of entomology is still continued in each number. The number for October contains an appreciative notice of the late excellent naturalist, Sir Thomas Moncreiff, Bart., president of the Perthshire Society of Natural Science.

*Royal Society of Tasmania, Papers and Proceedings of*, for 1877.—Hobart Town, 1878.—Among the more important papers are the following:—F. W. Hutton, on some South Australian Polyzoa (describes several new species from the shores of St. Vincent's Gulf).—Rev. J. E. T. Wood, census, with brief descriptions of the marine shells of Tasmania and the adjacent

islands.—Rev. W. W. Spicer, on alien plants.—Rev. J. E. T. Woods, on Australian Siphonaria (describes a new species, *S. zonata*).—M. Allport, on the present stage of the salmon experiment (November 12, 1877).—Baron Ferd. von Mueller, contributions to the phytography of Tasmania, in which he adds a few more plants to his previous enumeration and effects a few changes in nomenclature; there is added a note on *Phyllota* (*Pultinaca*) *diffusa*.—Rev. J. E. T. Woods, on some new Tasmanian marine shells (describes several new species).—The meteorology of Hobart Town, January to December, 1877. In January apricots and Jargonelle pears were ripe, the general apple and pear crop in February. Leaves commenced to fall in March; the chrysanthemums were in flower in April; Lachenalia and Photinia in May; crocuses and *Pyrus japonica* in June; almonds in full bloom in July; trees breaking into leaf in August; horse chestnut in flower in September; mulberry and lime trees in leaf in October; cherries and strawberries ripe in November; currants and gooseberries in December.

*Morphologisches Jahrbuch*, Band 5, Heft 3.—Dr. G. Born, on the nasal cavity and tear passages in the amniotic vertebrates, pls. 23-24.—L. Graff, on *Geonemertes chalicophora*, a new land Nemertine, pl. 25-27. This new species was found in the earth of a flower-pot in the palm-house at Frankfurt. The larger specimens were 12 mm. in length and  $\frac{3}{4}$  mm. in breadth; they are of a milk-white colour. A list of the land nemertines now known is appended, these being the original species of the genus described by Semper, *G. palensis*, and *Tetrastemma agricola*, of Willemoes-Suhm.—M. v. Davidoff, on the comparative anatomy of the posterior limbs in fishes, pl. 28-31, to which is appended a note by the editor, Prof. Gegenbaur, on the limb question.—Notice of Schneider's "Comparative Anatomy."

*Journal of the Russian Chemical and Physical Society*.—The last number of this journal contains a paper by Prof. Butleroff, on the present meaning of the chemical theory.—The conclusion of the researches, by M. Lebavin, on the nucleine of milk.—On derivatives of the fumaric and maleic acids, by M. Ossipoff.—On cholecamphoric acid, by M. Latchinoff.—On a new alkali derived from quinine, by MM. Wischnegradsky and Prof. Butleroff.—On the theory of dispersion of light, by M. Cheboueff.

## SOCIETIES AND ACADEMIES

### LONDON

**Mathematical Society**, November 13.—Mr. C. W. Merrifield, F.R.S., president, in the chair.—The treasurer's and secretaries' reports were read.—The new council was elected, the only changes in which were the substitution of Messrs. Leudesdorf and Lloyd Tanner, in the place of Dr. Spottiswoode, P.R.S., and Prof. H. J. S. Smith, F.R.S., the retiring Members.—The Chairman briefly, but in feeling terms, alluded to the losses the Society had recently sustained by the deaths of such accomplished mathematicians as Prof. Clifford, Sir J. G. Shaw Lefevre, and Prof. J. Clerk Maxwell.—The following communications were made to the Society:—(1) On the binomial equation  $x^p - 1 = 0$ , trisection and quartisection, Prof. Cayley, F.R.S.—(2) On cubic determinants and other determinants of higher class, and on determinants of alternate numbers, Mr. R. F. Scott.—(3) On a problem of Fibonacci's, Mr. S. Roberts, F.R.S.—(4) Notes on a class of definite integrals, Mr. T. R. Terry. (1) was principally concerned with the presentation in a simplified form of results given in Reuschle's "Tafeln complexer Primzahlen welche aus Wurzeln der Einheit gebildet sind" (4to, Berlin, 1875), and in Jacobi's, "Canon Arithmeticus" (4to, Berlin, 1839). (2) was on a branch of determinants which has received but little attention in this country. Mr. Lloyd Tanner communicated a paper on the subject to the Society at its June meeting in the present year. Amongst Continental papers are memoirs by Armenante, Padova, and Garbieri (in the *Giornale di Matematiche*), Dahlander and A. de Gasparis. (3) was an account and extension of work done in the Diophantine Analysis by Fibonacci, and recently by Genocchi. (4) The integrals considered were

$$\int_0^\pi \frac{\cos^p x \, dx}{(1 - 2a \cos x + x^2)^n} \quad \text{and} \quad \int_0^\pi \frac{\sin^p x \, dx}{(1 - 2a \cos x + a^2)^{n+p}},$$

where  $p$  is a positive integer and  $n$  any real quantity, positive or negative, integral or fractional.

**Geological Society**, November 5.—Henry Clifton Sorby, F.R.S., president, in the chair.—Henry Bruce Armstrong was elected a Fellow of the Society.—The following communications were read:—On the probable temperature of the primordial ocean of our globe, by Robert Mallet, F.R.S. According to the latest hypotheses as to the quantity of water on the globe, its pressure, if evenly distributed, would be equal to a barometric pressure of 204.74 atmospheres. Accordingly water, when first it began to condense on the surface of the globe, would condense at a much higher temperature than the present boiling-point, under ordinary circumstances. The first drops of water formed on the cooling surface of the globe may not impossibly have been at the temperature of molten iron. As the water was precipitated, condensation of the remaining vapour took place at a lower temperature. The primordial atmosphere would be more oblate and less penetrable by solar heat than the present, and the difference of temperature between polar and equatorial regions would be greater; so that, in the later geologic times, ice may have formed in the one, while the other was too hot for animal or vegetable life. Thus, formerly the ocean would be a more powerful disintegrant and solvent of rocks, mineral changes would be more rapid, and meteoric agencies would produce greater effects in a given time.—On the fish-remains found in the cannel coal in the middle coal measures of the West Riding of Yorkshire, with the description of some new species, by James W. Davis, F.G.S.—On the skull of *Argillornis longipennis*, Owen, by Prof. R. Owen, C.B., F.R.S. In this paper the author described a fragmentary cranium from the London clay of Sheppey, from which it was procured by Mr. W. H. Shrubsole, who also furnished him with the humerus described in a former paper under the name of *Argillornis longipennis*.<sup>1</sup> In the present specimen the lower jaw and the fore-part of the upper jaw are deficient. The author described the characters presented by the specimen in detail, and stated that, like those of the humerus previously described, they seemed to approximate the fossil most nearly to the albatross among existing birds, although, like *Odontopteryx*, it differed from *Diomedea* and also from the cormorant and the totipalmates generally, in the absence of the basi-rostral external nares and of the supra-orbital gland-pits. The present fossil differs from *Odontopteryx* in having the fore-part of the frontal broader and the upper tract of the bill less defined, as also in some other characters; but no comparison of the palatal structure can be made upon the existing specimens. In point of size, taking the albatross as a term of comparison, this skull may well have belonged to a bird with wings of the extent indicated by the humerus already described; and the resemblance of the skull to that of the albatross would also seem to be confirmatory of the specific collocation of the two specimens. The presence of four small pits or perforations on the only part of the alveolar border which appears to be uninjured, leads the author to conjecture that the bird may have been dentigerous.

**Physical Society**, November 8.—Prof. W. G. Adams in the chair.—The first paper read was on an analogy between the conductivity for heat and the induction balance effect of copper-tin alloys, by W. Chandler Roberts, F.R.S. Mr. Roberts traced a remarkable resemblance between a curve representing the induction balance effect of the copper-tin alloys published by him in June last, and the curve of Calvert and Johnson for the conductivity of heat, and on the other hand he showed that the induction curve does not agree with Matthiessen's curve for the electric conductivity of the same alloys. The author showed that the two alloys which occupy critical points of the curve ( $\text{SnCu}_3$  and  $\text{SnCu}_4$ ) are of much interest. Possibly both are chemical combinations, and the wide difference in the position they occupy probably marks a difference of allotropic state. For the solution of such questions, however, Mr. Roberts considered that we might look with confidence to Prof. Hughes' beautiful instrument, which, he hopes, will also help us to determine whether the relation between conductivity for heat and electricity is really as exact as it has hitherto been supposed to be. As supplementary to this subject Dr. O. J. Lodge stated that he had compared the conductivity of six bars of the tin-copper alloys, as measured by the balance and by the Wheatstone-bridge, and found them to agree very closely. The bridge results confirmed the resemblance traced by Mr. Roberts. Prof. Hughes expressed his opinion that existing tables of conductivity were erroneous. They disagreed among themselves

<sup>1</sup> *Quart. Journ. Geol. Soc.*, vol. xxxiv. p. 124.